

Editorials

SETAC Europe LCA Steering Committee – The Early Years

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Introduction

SETAC (Society of Environmental Toxicology and Chemistry) played the formative role in the initial stages in the development of LCA. This role laid foundations which led to LCA becoming an established and accredited technique, such that it now has many exponents and produces many valuable results contributing to environmental progress. Because of this formative role, and the results it has achieved, it is perhaps an appropriate time to review and remember how the LCA technique was pioneered. The following presents a brief overview of what was an exciting and challenging era in LCA.

1 Initiation

1.1 Sheffield Conference

The SETAC Europe founding conference was held 7–10 April 1991 in Sheffield, UK organized by Peter Calow and his colleagues at the University of Sheffield. The main meeting was preceded by a well-attended workshop on LCA with prominent speakers notably including Ian Boustead, Jim Fava, Heinz-Jochen Poremski and Kim Christiansen. Jim Fava reported from the first SETAC LCA Workshop at Smugglers Notch, Vermont, 18–23 August, 1990 with 54 participants, who developed the first framework for LCA.¹ It was suggested that SETAC should make a compilation of who was working with LCA and organize an information exchange.

Afterwards there were informal discussions about the future of LCA in SETAC Europe during which, among others, the creation of a SETAC LCA Journal was suggested. A first draft proposal was made later that month, and the discussions continued for some years and ended up by extending the scope of the SETAC member journal ET&C to accept some LCA papers. This was only partially successful due to a general lack of interest by the main body of SETAC. However, because of the interest and need for a publication mechanism for LCA, it became possible for the Int J LCA to be born in Germany and to provide a useful and fulfilling role.

¹ Fava JA, Denison R, Jones B, Curran MA, Vigon B, Selke S, Barnum J. A Technical Framework for Life-Cycle Assessments. Workshop Report. Washington DC: SETAC, 1991.

1.2 Founding Meeting in Belgium

At the Sheffield meeting, the Council had decided to form a 'SETAC Europe Task Group on Life Cycle Analysis', which met for the first time on 26 June 1991 at Proctor & Gamble's (P&G) Technical Centre in Brussels in connection with a Council meeting. This Task Group had 5 members: Nic deOude (P&G, Founding SETAC Europe President), Peter Calow (newly elected SETAC Europe President), Dennis Postlethwaite (Unilever), Heinz-Jochen Poremski (Umweltbundesamt) and Allan Astrup Jensen (Danish Technological Institute). One of the first tasks for the Group was to plan a two-day SETAC Europe LCA workshop to be held in Leiden, the Netherlands, December 2–3, 1991, as a follow-up of the previous P&G 'Specialized Workshop on Life Cycle Analysis for Packaging Environmental Assessment' held in Leuven on September 24–25, 1990. The Leiden Workshop should be organized by the Centre of Environmental Science (CML) at University of Leiden and Institute for Environmental and System Analysis (IMSA), for which reason Helias Udo de Haes and Jan A. Assies from CML and C. Hoogervorst from IMSA were invited to the meeting.

2 Development of the LCA Steering Committee and Early Meetings

2.1 Second Meeting in Denmark

The workshop planning continued at the next meeting of the LCA Task Group on 4 September 1991 at DTI in Taastrup, Denmark. Calow was excused and Hoogervorst (IMSA), Gjalt Huppens (CML) and Anders Schmidt (DTI) participated as guests.

The meeting was well-prepared. Both deOude and Postlethwaite prepared proposals beforehand for future working items. Nic deOude identified two urgent scientific areas (see 1 and 2) and two audiences (see 3 and 4):

- 1) Criteria – notably boundaries, basic data, assumptions, transparency, reporting;
- 2) Aggregation of data: How can different emissions be added objectively, even if it is only by environmental compartment?
- 3) Experts who need to develop the science, including LCA experts as well as ecotoxicologists, and possibly human toxicologists;
- 4) A wide range of users – from regulatory bodies, industry, environmental institutes and academic establishments.

Nick deOude also saw a need for close integration with the LCA activities in the SETAC (US) LCA Advisory Group, which

had also been formed in June 1991. It was later decided that 3 of our members should also be members of the US Group and vice versa. Postlethwaite emphasized the need for establishing LCA on a scientific, rational and impartial basis in a form which could be universally applied and practiced. In order to achieve this he suggested production of a SETAC working manual for LCA practitioners and an annual LCA conference in addition to smaller meetings. Further, he foresaw a critical need for an LCA data base system and an LCA newsletter. Following from this, deOude produced the first issue of an LCA Newsletter called 'LCA Supplement' later the same month. Poremski made a proposal for a system of information exchange and inventory of LCA studies, and, in order to increase the LCA presence at the second SETAC Europe Conference in Potsdam, he got the job to organise a two-day LCA symposium, held 25–26 June, 1992.

The following day, 5 September 1991, an LCA symposium: 'Design of environmentally friendly products – application of lifecycle analysis' was held at DTI with many of the attendees as presenters. In that way some of the travel expenses could be covered.

2.2 Meetings in Brussels

The third meeting of the Steering Committee was held in P&G in Brussels on 2 October 1991. Only deOude, Postlethwaite, Jensen and the new member Pierre-Francois Baisnée (Eco-bilan) were present. Two other new members Walter Klöpffer (Battelle) and Rod Perriman (ICI) were excused.

On the following day, there was a preparatory meeting of the proposed 'LCA Foundation' of companies, wishing to support the LCA development in SETAC Europe and the LCA Newsletter. This initiative led to the creation of the 'Society for Promotion of LCA Development (SPOLD)', which was independent of SETAC. Sponsorship by SPOLD was necessary for the circulation free-of-charge to all interested people of the LCA Newsletter published four times a year. This newsletter soon established itself as the most important LCA publication ('LCA NEWS') of the day.

2.3 Joint Meeting in Seattle

During the SETAC North America Annual Meeting in Seattle, held 3–7 November 1991, there was a joint meeting of the US and European LCA groups. The Americans were organizing a workshop on Life Cycle Impact Assessment to be held in Sandestin, Florida, 1–7 February 1992.² Allan Jensen became a member of the organizing committee. There was a great interest and more than 200 wanted to participate, but there was only room for about 60. It has later been criticized that there was only space for 7 participants from Europe. However, contrary to the European workshops, participation was free of charge, and travel expenses were also covered for non-industrial participants.

2.4 The Leiden LCA Workshop

This 'state of the art' workshop was held 2–3 December 1991, chaired by Helias Udo de Haes, and Jan A. Assies

² Fava J, Consoli F, Denison R, Dickson K, Mohin T, Vigon B (eds). A Conceptual Framework for Life-Cycle Impact Assessment. Pensacola: SETAC, 1993.

made an introduction paper.³ About 50 participants from Europe and the USA did attend, and all the papers were published in the proceedings.⁴ The workshop identified the following parts of LCA: Goal definition, inventory, impact analysis (later changed to classification), valuation, application, together leading to improvement analysis.

2.5 The Fourth Meeting in the Netherlands

The fourth meeting of the LCA Steering Committee was held 4 December 1991 in Amsterdam, just after the Leiden Workshop. Nic de Oude, Postlethwaite, Poremski, Jensen and Baisnée participated together with the new members: Klöpffer, Perriman, Helias Udo de Haes and Lars-Gunnar Lindfors (IVL, Sweden). Frank Consoli (Scott Paper) from the American LCA Group also participated. Most of the discussions were about future meetings.

2.6 The Fifth Meeting in Brussels

The fifth meeting was in Brussels on March 17, 1992. All members – besides Calow – were present, and Neal Kirkpatrick from PIRA was a guest in order to inform about the LCA work in the CEN/TC261 group on packaging LCA, which he himself chaired. The main focus of the meeting was the planning of the Potsdam LCA Symposium. There were many lively discussions about the selection of topics and speakers. Important was also the discussion of the outcome of the Sandestin workshop, where the famous 'SETAC-Triangle', from the first SETAC Workshop (Fig. 1a) and amended by the Leiden Workshop, was changed, although there were still some contentious issues, especially with the American LCA experts (Fig. 1b).

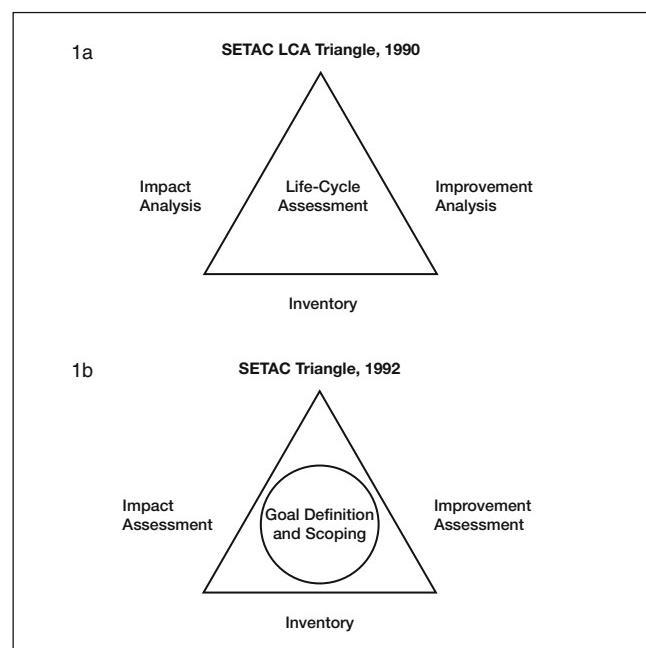


Fig. 1a and Fig. 1b

³ Assies JA. Introduction paper to SETAC Europe Workshop on Environmental Life Cycle Analysis of Products. CML, Leiden University, October 1991. 28 pp.

⁴ deOude NT (ed). Life-cycle Assessment. Brussels: SETAC Europe, 1992.

Further, 19 European participants out of a total of 51 were selected for the SETAC LCA Data Quality Workshop held in Wintergreen, Virginia, 4–9 October 1992.⁵ All participants were required to complete a questionnaire beforehand detailing their views on data quality.

3 Code of Practice Development

3.1 Meeting in Berlin

In order to inspect the conference facilities, the next LCA Steering Committee meeting was held at Umweltbundesamt in Berlin on 13 May, 1992. Kirkpatrick had now become a member of the Committee. Perriman and Udo de Haes were excused. Peter-Dietrich Hansen, the main organizer of the SETAC event, participated as a guest, when the conference and the LCA Symposium were discussed. Sven Brandberg from INTAKTA participated during a discussion of an EU research proposal. Harald Neitzel from Umweltbundesamt was also a guest and contributed with a summary of a new German report on 'Ecobalances for Products'. In order to protect the credibility of SETAC, it was decided to remove all links to SPOLD, which was essentially an industry body. Without support from SPOLD, the Committee had to look for other sponsors. The financial discussion continued during the following meetings. The rapid increase of activities required some operating guidelines for the committee and a subgroup got the task to produce a draft. The most important issue, however, was the need for harmonizing LCA terminology and practice in a common SETAC World position before the ISO standardization started. A vital need for a Code of Conduct/Practice for LCA was identified, and this led to a proposal for a major workshop for developing one, to be held in Europe following the First SETAC World Congress in Lisbon in March 1993.

3.2 Meeting in Potsdam

The Next Steering Committee meeting was in Potsdam (Berlin) 24 June 1992 in connection with the SETAC Europe conference. Several Americans participated (Fava, Richard Denison and Richard Kimerle). Here, the focus was on future workshops and sponsorships. At first, the Americans were sceptic concerning the idea of a Code of Practice. However, because the need was pressing in Europe, and liable, without SETAC action, to be developed elsewhere with less than fully authoritative expertise and opinion, the Americans willingly agreed to participate. The operating Guideline was therefore approved⁶, and Dennis Postlethwaite was elected chairman, and Poremski and Allan Jensen vice-chairs. A subgroup with Jensen, deOude, Poremski, Postlethwaite and Richard Kimerle from the US met the next day, 25 June, and discussed the workshop in more detail and suggested the initial organizing committee of Poremski, Postlethwaite and Bea de Smet from Europe and Denison, Fava and Consoli from the US. Three follow-up workshops on inventory, classification and valuation were also discussed. In addition, a

⁵ Fava J, Jensen AA, Lindfors L, Pomper S, De Smet B, Warren J, Vigon B, eds. Life-cycle assessment data quality: a conceptual framework. Workshop Report, Wintergreen, 4–9 October 1992. Pensacola: SETAC, 1994.

⁶ Later improved by SETAC Council on 30 November 1992.

joint SECOTOX-SETAC workshop on 'Product-related LCA – toxicity evaluation' was discussed for 7–8 January 1993 in Lyngby, Denmark.

The SETAC Europe Potsdam Congress contained a two-day Life-Cycle Symposium, held on 25–26 June 1992 with 14 lectures and discussions, documented in the proceedings thereof.⁷

3.3 Brussels Meeting

The next SC meeting was held 3 September 1992 in Brussels. Ten members attended and De Smet (P&G) and Rainer Griesshammer (Öko-Institut Freiburg) were guests. The latter provided information about a public hearing about LCA in the German Parliament on 24–25 September 1992. It was decided to have a public Forum in Brussels on 21 January 1993 about the outcome of the Wintergreen workshop. De Smet and Griesshammer were accepted as new members, but it was realized that the SC did not have the ideal SETAC balance between affiliations and needed members from e.g. Governments, and an invitation for new members was announced in the following newsletter.

3.4 Joint Meetings in the USA

The Code of Practice Workshop was further planned at a joint ad hoc meeting of SETAC US/Europe held 6 October 1992 during the Wintergreen Workshop. Participants: Fava, Tim Mohin, Consoli, Bruce Vigon, Denison and Rod Parrish from US and Postlethwaite, Jensen, Poremski, de Smet and Klöpffer from Europe. Frank Consoli agreed to lead the organizing committee, which was later expanded with more people from the US and Europe.

During the SETAC'1992 conference in Cincinnati, a formal joint meeting was held 8 November 1992, with eight Americans and deOude, Postlethwaite and Jensen from Europe, at which the Lisbon workshop outline was finalized.

3.5 Meetings in Europe

The next SC meeting was held in Brussels on 2 December 1992. Eleven members attended. The papers for the LCA session at SETAC World Congress held in Lisbon 26–31 March 1993 were selected by Postlethwaite, Jensen and Udo de Haes. The Organizing committee for the LCA Code of Practice workshop in Sesimbra (Lisbon) 31 March–3 April 1993 had their last meeting in London 13–14 February 1993, from which a Code of Practice pre-work document was produced.

On 21 January, a successful Open Forum presenting the findings and outcomes of the Sandestin and Wintergreen workshops was held in Brussels. On 22 January 1993, the day after the Open Forum, the Steering Committee met at the SETAC office in Brussels. Eight members attended, together with Fava from the US. A Code of Practice Open Forum was planned, to be held in Brussels on 25 May 1993, and it was decided to invite 50 people to the Code of Practice workshop in Sesimbra.

⁷ Life-Cycle Assessment. Workshop Report 25–26 June 1992, Potsdam, Germany. Brussels: SETAC Europe, 1992.

A further SC meeting was held in Brussels on 11 March 1993 with nine members attending. Based on the many submitted papers for Lisbon, it was proposed that an annual LCA conference be organized separate from SETAC Europe's main event (that was never approved by SETAC Europe Council). A joint US-Europe meeting was held 31 March 1993 during the Lisbon conference prior to departure to Sesimbra for the Code of Practice workshop 31 March–4 April 1993.

3.6 Sesimbra Workshop

The workshop in Sesimbra was probably the most important of all the SETAC LCA activities because, through discussion, debate and consensus-building, a unified document was produced. In fact, the initiative was probably the most formative of all those undertaken by SETAC on LCA since, not only did it provide agreed and accepted methodology and principles that all could use, it later became a cornerstone in the development of the ISO standards on LCA. There were some 50 participants, deliberately selected to represent a wide range of views and opinions and to include a full representation of all interested parties – from Institutes, Governmental Bodies, Academia and Industry. The participants (Fig. 2), and especially the organizing committee, worked very hard, such that the first report draft was circulated for comment by April 5th – quite a remarkable achievement.



Fig. 2: Sesimbra Workshop participants

This draft was further debated and discussed by all participants, after which it was presented to a wider audience at Open Forums held in Europe (May 25th) and the USA (June 24th). The final document, which incorporated significant points and amendments from these meetings, was published in the autumn of 1993. Because of legal implications in the US, the title had to be changed to a Guideline for Life-Cycle Assessment with the subtitle: A Code of Practice.⁸ It was planned that an additional, longer and more methodological report should be made based on the Sesimbra discussions but, because of other pressures, this failed to materialize, much to the disappointment of several participants.

⁸ Consoli F, Allen D, Boustead I, de Oude N, Fava J, Franklin W, Jensen AA, Quay B, Parrish R, Perriman R, Postlethwaite D, Séguin J, Vigon B, eds. Guidelines for Life-Cycle Assessment: A 'Code of Practice'. From the workshop held at Sesimbra, Portugal, 31 March–3 April 1993. Brussels/Pensacola: SETAC, 1993.

3.7 Further European Meetings

The next SC meeting in Brussels was held on 24 May 1993, the day before the Open Forum on the Sesimbra Workshop. Only seven members and Consoli were present.

At the SC meeting in Brussels, held on 15 September 1993, Walter Klöpffer retired. A wish from the US to merge the two SETAC LCA Committees was refused. The early Years of SETAC LCA was reviewed by Dennis Postlethwaite, Chairman of the European LCA Steering committee.⁹

4 Further Developments and Activities

4.1 Coordination Group was Formed

A joint LCA Group meeting was organized on 16 November 1993 at the SETAC'93 conference in Houston, Texas. Here, a Global Coordination Group was established and a three-year work plan was tentatively agreed upon, with six areas for working groups in both Europe and North America:

1. Case Studies,
2. Screening,
3. Impact Assessment,
4. Education,
5. Conceptually Related Programmes, and
6. Enhancement of Inventory Methodology.

4.2 First Case-Study Symposium

At the next SC meeting held on 6 December 1993 in Brussels – the day before the Case Study Symposium – there were only 7 members attending. Lars-Gunnar Lindfors took over the 2nd Vice-chair from Porembski. The planning of the LCA sessions at the SETAC Europe Annual Conference to be held in Brussels, April 1994, was started. More than 100 abstracts were already submitted. This meeting was followed by the first SETAC LCA Case-Study Symposium on 7 December 1993, with the 11 lectures and several posters attracting some 50 attendees.

4.3 Allocation Workshop

At the SC meeting, held 23 February 1994 in Brussels, new links were forged when Carlo Pesso from OECD participated on the Committee for the first time. The main topic was the establishment and management of working groups for the next three years. There were almost 50 individuals from Europe interested in being WG members, although the interest for the Education WG was low and the topic was included in Conceptually Related Programmes WG. The following days, 24–25 February 1994, there was a workshop held at CML in Leiden on Allocation in LCA. It was sponsored by SPOLD and SETAC Europe.¹⁰

⁹ Postlethwaite D. Development of Life Cycle Assessment (LCA) – the Role of SETAC (Society of Environmental Toxicology and Chemistry) and the 'Code of Practice'. *ESPR* 1994; 1:54–55.

¹⁰ Hupperts G, Schneider F (eds). Proceedings of the European Workshop on Allocation in LCA at the Centre of Environmental Science of Leiden University, Section Substances and Products, Leiden, 24th and 25th of February 1995. Leiden: CML/SETAC, 1994.

¹¹ Udo de Haes HA, Jensen AA, Klöpffer W, Lindfors L-G (eds). Integrating Impact Assessment into LCA. Brussels: SETAC Europe, 1994.

4.4 Brussels Congress

The next SC meeting, on 11 April 1994, was during the SETAC Europe Annual Congress held on 11–14 April 1994 in Brussels. Kirkpatrick resigned as a member and Roland Clift (University of Surrey, UK), Patrick Hofstetter (ETH) and Jacqueline Cramer (TNO) became new members. The LCIA session at the Congress had more than 100 attendees. A proceeding was later published.¹¹

4.5 Results of WGs

The first meeting of the Life Cycle Impact Assessment WG was also held in Brussels on 13 April 1994. Udo de Haes was elected chair. The WG decided to have a workshop at ETH in Zürich from 8–9 July 1994. The result of that workshop was a First Working Document on Life-Cycle Impact Assessment Methodology.¹² Four subgroups were formed, and the WG finished later with another report.¹³ The European WG on Screening also ended its work with a publication.¹⁴

4.6 New SOP

An SC meeting was held at CML in Leiden on 6 October 1994, with 11 members including the new members Clift, Cramer and Hofstetter. A new 'Standard Operation Principles' (SOP) was implemented. A Coordination meeting for WG Chairs was set for 1 December 1994 in Brussels. It was decided to invite WG chairs to SC meetings. It was also decided to make the Case-Study Symposium an annual event; for the next time on 1 December 1994. It was also decided to cooperate with the World Industry Council for Environment (WICE – now WBCSD) about a workshop concerning LCA and Improvement to be held in Frederikstad, Norway, 27–30 March 1995. It was suggested to form an EU Network on LCA. It was later approved by the EU and became the LCANET project coordinated by CML.

4.7 Brussels Meetings

At the SC meeting held in Brussels on 30 November 1994, Baisnée, Poremski and Perriman stepped down from the SC and were substituted by Laurent Grisel, Petra Greiner and Vanja Markovic, respectively (from the same affiliations). Patrick Hofstetter became chair of a Group dealing with definitions and symbols. There were about 100 participants in the 2nd Case Study Symposium held in Brussels on 1 December 1994. The day after 2 December, the WG on Impact Assessment met in Brussels, at which William Owens was guest from the US and the different approaches between US and Europe were discussed.

4.8 New Members

The SC meeting in Brussels, held 28 February 1995, had 11 participants, including the new members Laurent Grisel and Vanja Markovic. Greiner, from UBA, declined the invitation to become a member. The LCA Newsletter was now

¹²Available from ETH.

¹³Udo de Haes H (ed). Towards a Methodology for Life Cycle Impact Assessment. Brussels: SETAC Europe, 1996.

¹⁴Christiansen K (ed). Simplifying LCA: Just a cut? Brussels: SETAC Europe, 1997.

being distributed to 600 non-members of SETAC. SETAC Europe Council had approved the SOPs, which had been published in the March issue of the LCA News. It was suggested that there could not be more than 12 members of the SC. Postlethwaite announced that it was now opportune for him to stand down as chairperson and make way for fresh blood. AA Jensen was nominated as chairperson elect. The WGs progressed well, and the format of final reports was discussed.

4.9 Copenhagen Congress – Changes of Chair

An SC meeting in Copenhagen, held 27 June 1995, was held in connection with the SETAC Europe Annual Congress of 25–28 June. The LCA session at this conference was somewhat disturbed by parallel ISO LCA meetings in Oslo, Norway, which many people also had to attend. It was finally decided that the WGs should complete their work before the end of 1996 and submit a report before mid 1997. It was emphasized that a prime objective of the WG activity was to eventually use the outcome to update the Code of Practice, this being essential to maintain SETAC credibility. Postlethwaite relinquished his office as Chairman on 30 June and became vice-chairman together with Lindfors. AA Jensen was elected chairman. After the conference, the Impact Assessment WG had a workshop on 29 June at the Technical University of Denmark in Lyngby.

4.10 Input into ISO LCA Standardisation Initiatives

During the SETAC World Congress in Vancouver, held 5–9 November 1995, there was a whole day session on LCA with about 70 attendees and an LCA short-course. On 5 November, there was an LCA Coordination Group meeting. There was no US interest in a proposed workshop in 1997 designed to update of the LCA Code of Practice. In the US, emphasis had shifted to applications of LCA and, especially, to the ISO standardization work. On 7 November, there was a lunch meeting about the SETAC mandate to ISO, where there were some differences of opinion between the US (Scott Noessen (Dow)) and European (Udo de Haes) delegates. The SETAC-NA was of the opinion that it was too early to standardize impact assessment.

4.11 Brussels Meetings

Before the SC meeting, held 27 November 1995 in Brussels, Griesshammer resigned from the SC because of a lack of funding, and Clift took over the scientific editorship of LCA News.

The 3rd case Studies Symposium was held on 28 November 1995 with a new format – a combination of a 5-min oral presentation and a poster. Clift and Grisel organized the event and there were about 80 participants. The day after, the Impact Assessment Group held a meeting.

4.12 Copenhagen Meeting

Next SC meeting was held in Copenhagen on 15 March 1996 in connection with an LCANET meeting. The Role of SETAC was discussed, and the chairman presented a work plan with a strategic plan and plan for short-term activities.

4.13 Taormina Congress

At the SETAC Europe Congress, held in Taormina on 19–22 May 1996, there were 60 LCA abstracts submitted and mostly accepted, making almost 3 full LCA days; a special issue of IJLCA with papers from the sessions was foreseen. The SC meeting was held on 20 May; Hans-Herman Eggers from UBA was elected member of the SC together with Pere Fullana from Randa Group, Spain. The chairs were reelected for one year. Jensen announced his wish to stop in 1997 and should supposedly be followed by Lindfors.

4.14 Leiden Meeting

A SC meeting was held on 19 September 1996 at CML in Leiden. The most important was the discussion of the work plan and future activities. In June 1996, deOude left the LCA SC for other commitments. A following SC meeting was organized on 2 December 1996 in Brussels. It became clear that Lindfors could not take over the chairmanship in 1997. The fourth SETAC Europe Case Study Symposium was organized on 3 December 1996 in Brussels by Grisel and Markovic.

4.15 Amsterdam Congress – New Chairs

At the SETAC Europe Congress in Amsterdam, held 6–10 April 1997, there was a 1½-day LCA session/workshop with about 100 participants. The outcome of the WGs were presented and discussed. An SC meeting was held on 7 April. Postlethwaite, Grisel, Lindfors and Pesso left the SC, and five new members: Rolf Bretz (Ciba), Günter Fleischer (TU Berlin), Antonio Giacomucci (ABB), Agnes Schuurmans (Intron), and Andreas Windsberger (TU Wien), participated for the first time. Vanja Markovic was elected as Chair and Udo de Haes and Jensen as vice-chairs. The SOPs were changed according to normal SETAC practice. A new time was arising!

5 Summary and Conclusions

The role played by SETAC in the early days of its development and establishment of LCA as a credible and valuable technique was a vital and formative one. Without this role, there can be little doubt that progress would have been much slower and more difficult. People with many different expertises, opinions and, of course, vested interests were melded by the SETAC initiatives, such that constructive debate and consensus ensured that the LCA techniques and methodology – which eventually emerged – were agreed upon, acceptable and applicable.

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